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WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :
H04B 7/216, H04Q 7/20

A1

(11) International Publication Number: WO 00/35126

(43) International Publication Date: 15 June 2000 (15.06.00)

(21) International Application Number: PCT/KR99/00745

(22) International Filing Date: 7 December 1999 (07.12.99)

(30) Priority Data:

| | | |
|---|---|---|
| 1998/54053 | 7 December 1998 (07.12.98) | KR |
| 1999/14771 | 24 April 1999 (24.04.99) | KR |
| 1999/22393 | 15 June 1999 (15.06.99) | KR |

(81) Designated States: AU, CA, CN, IN, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
*With international search report.*
*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

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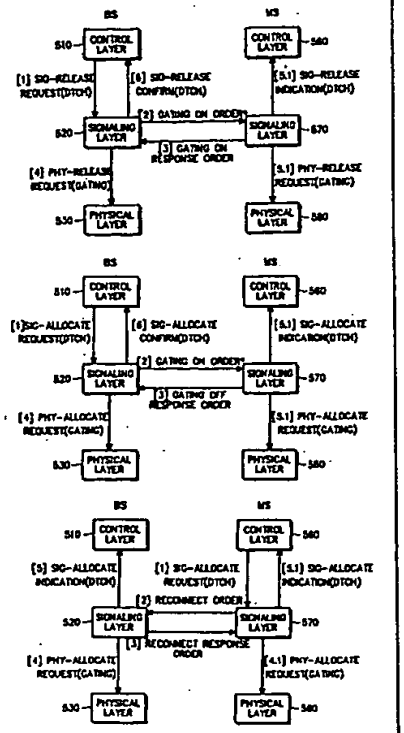
(54) Title: DEVICE AND METHOD FOR GATING TRANSMISSION IN A CDMA MOBILE COMMUNICATION SYSTEM

(57) Abstract

A method for determining a gating rate in a base station for a CDMA communication system is disclosed. The method comprises transmitting information for assigning a dedicated control channel and a traffic channel to a mobile station, when a call is generated; after call setup, transmitting a message requesting mobile station's capability information to the mobile station; receiving the capability information including gating availability information of a reverse pilot signal and information about at least one gating rate, transmitted from the mobile station in reply to the request message; and determining a gating rate according to the capability information, transmitting information about the determined gating rate to the mobile station, and transitioning to an active state. The mobile station's capability information includes information about gating availability and at least one gating rate, when gating is available.



# DEVICE AND METHOD FOR GATING TRANSMISSION IN A CDMA MOBILE COMMUNICATION SYSTEM

## BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a communication device and method for a CDMA mobile communication system, and in particular, to a device and method for gating transmission.

2. Description of the Related Art

A conventional CDMA (Code Division Multiple Access) mobile communication system primarily provides a voice service. However, the future CDMA mobile communication system will support the IMT-2000 standard, which can provide a high-speed data service as well as the voice service. More specifically, the IMT-2000 standard can provide a high-quality voice service, a moving picture service, an Internet search service, etc.

In a mobile communication system, a data communication service is typically characterized by transmissions of burst data alternates with long non-transmission periods. The bursts of data are referred to as "packets" or "packages" of data. Data communication service in future mobile communication systems will employ a channel assignment method in which a dedicated channel is assigned only for the duration of the data transmission. That is, because of limited radio resources, base station capacity and power consumption of a mobile station, the mobile communication system connects a traffic channel and a control channel only for an actual data transmission duration and otherwise releases the dedicated channels (i.e., the traffic channel and the control channel) when there is no data transmitted for a predetermined amount of time. When the dedicated channels are released, subsequent communication is performed through a common channel, thus increasing utilization efficiency of the radio resources.

To accomplish this, the system supports various states based upon channel assignment circumstances and the existence or nonexistence of certain state information. FIG. 1 shows a state transition diagram for a data packet service in a mobile communication system.

transition to the control hold state happens in response to a state transition request generated in the active state during the process of FIG. 20;

FIG. 22 shows a procedure in which a transition to the active state happens after determining a gating rate while entering the control hold state, and the base station transmits the determined gating rate to the mobile station in the active state and then transitions to the control hold state; and

FIG. 23 shows a procedure for performing gated transmission in the control hold state.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A description of the invention will be made with reference to material disclosed in Korean patent application No. 98-11381.

In a CDMA communication system, if only control signal is transmitted and received over the dedicated control channel between the base station and the mobile station and the physical channel suffers from a discontinuous transmission (DTX) or a gating transmission, the channel consumption can be reduced. Also, in case that data to be transmitted is generated, a transmission/receiving method can be quickly returned through the control signal. In the present invention, it is called "control hold state" that only control signal can be transmitted and received and the physical channels are in process of the discontinuous transmission and reception or the gating transmission and reception .

The present invention is described using Fig. 1 and a memory device connected to a controller. The memory stores an operating program of the invention, and a program and data for controlling radio resources (e.g., orthogonal code and transmitter). A message generator, under the control of the controller of Fig. 2, generates various messages defined by the invention, such as a dedicated control channel message, a paging channel message and an access channel message. In FIG. 2, a control layer 10 and a signaling layer 30 comprise the controller, and a physical layer 50 refers to respective transmission channels.

A base station and a mobile station of the novel CDMA communication system communicate a control signal and data over the dedicated control channel, the supplemental channel and the fundamental channel, which are established in the active state. The supplemental channel is released and the fundamental channel is used to perform gated transmission, when a transition occurs from the

FIG.3

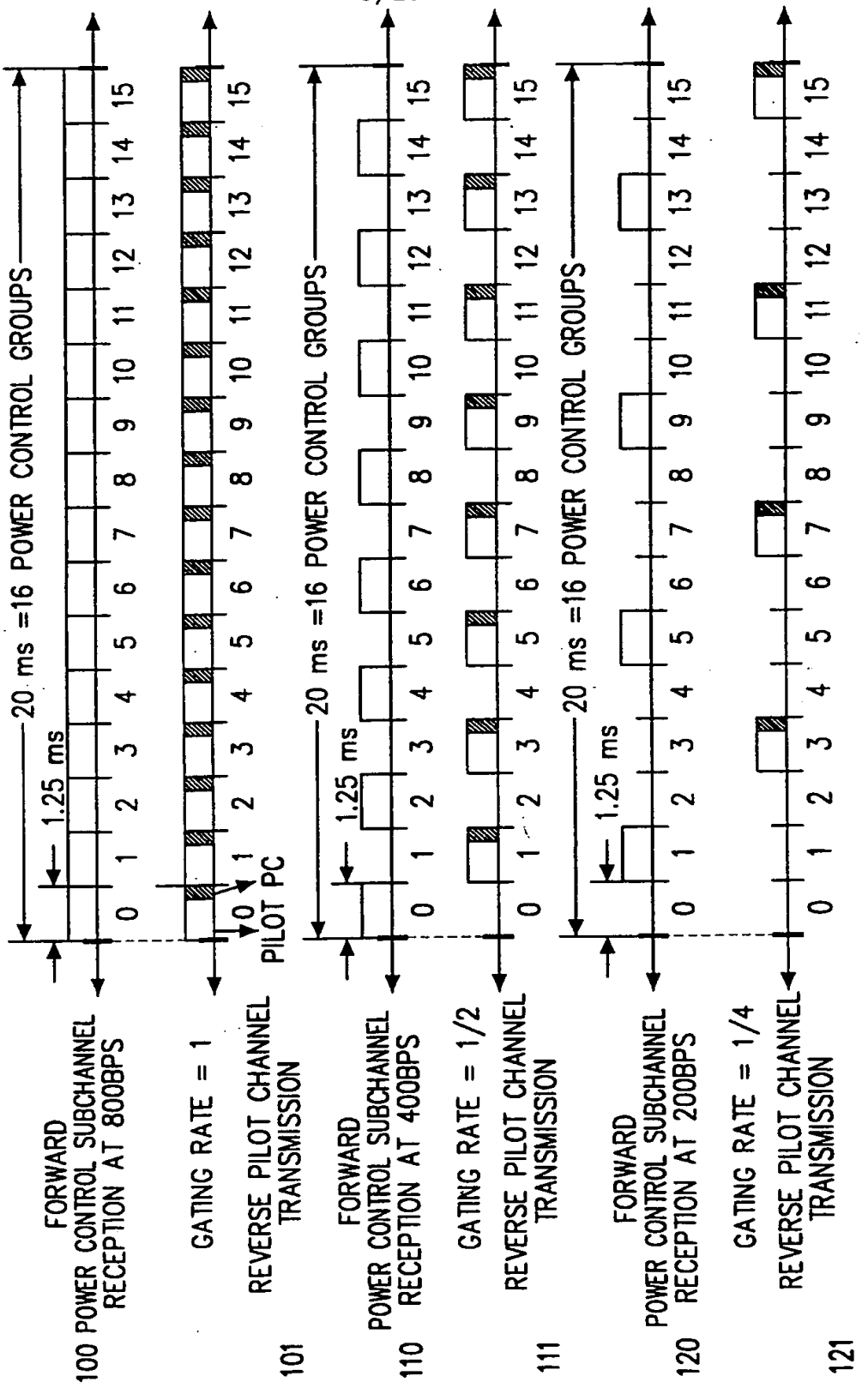
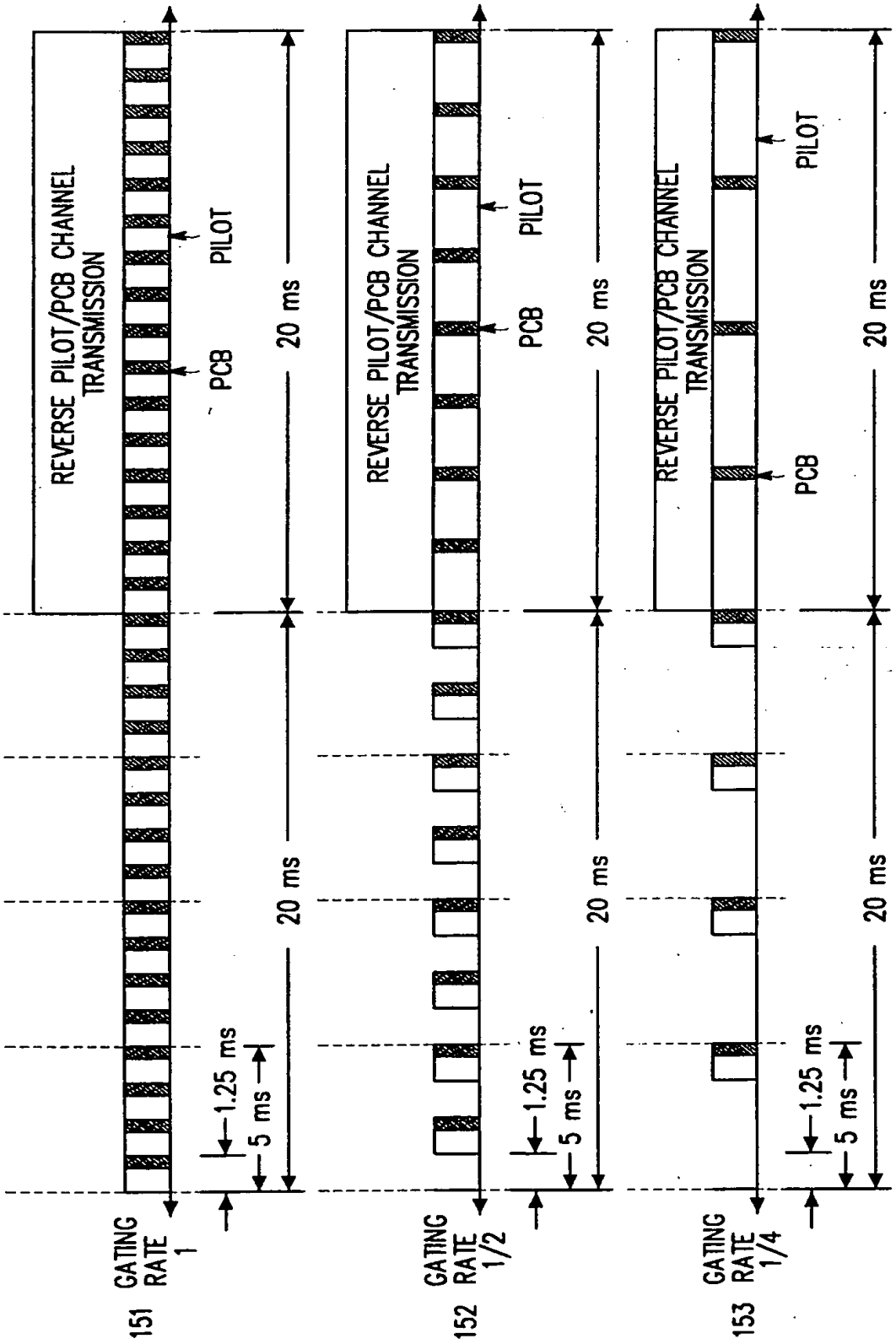


FIG.4


REVERSE PILOT/PCB CHANNEL TRANSMISSION
PILOT
PCB
20 ms
1.25 ms
5 ms
GATING RATE 1
151
GATING RATE 1/2
152
GATING RATE 1/4
153